CLAIMS:

1. A bag-making and packaging machine comprising:

a bag-making apparatus which manufactures bags by performing a bag-making operation while unwrapping a film from a film roll whose axial center is disposed in a horizontal attitude and feeding said film in a direction of length thereof, said bag-making operation including:

a folding and overlapping operation of said film by a forming apparatus,

a sealing operation of film locations that correspond to bag bottom portions and side portions by a sealing apparatus, and

a separating operation of bags by cutting by a cutting apparatus;

a bag-filling packaging apparatus which grips both side edges of said bags by means of grippers thus suspending said bags, intermittently moves said suspended bags along an annular path, and performs packaging operations including filling of said bags with contents and sealing of mouths of said bags, at respective stopping positions; and

a bag transfer apparatus which receives said bags at a receiving position at a final end of said bag-making apparatus, conveys said bags to a transfer position, and transfers said bags to said grippers of said bag-filling packaging apparatus; wherein

said bag-making apparatus is a horizontal type bag-making apparatus in which

said film is folded in two and overlapped in a horizontal attitude by said forming apparatus, and bag-making operations following said folding and overlapping are performed on said film that is fed in a horizontal attitude,

positions corresponding to lower ends of folded and overlapped film bags are set in same positions regardless of a bag length, and

said respective apparatuses of said bag-making apparatus that perform said bag-making operation are disposed with reference to said positions; and

said bag transfer apparatus receives bags in a horizontal attitude, stands said bags upright, and transfers said bags to said grippers of said bag-filling packaging apparatus.

2. The bag-making and packaging apparatus according to Claim 1, wherein said bag transfer apparatus comprises:

a suction plate which is disposed in a vertical plane perpendicular to a feeding direction of said film so that said suction plate is free to swing, and

a suction plate swing mechanism which causes said suction plate to swing in a reciprocating motion between a lower downward-facing position and an upper sideward-facing position; wherein

said suction plate suction-chucks bag surfaces of said bags in a horizontal attitude when said suction plate is in said downward-facing position, and stands said bags upright when said suction plate is in said sideward-facing position, and

a position of an axial line of a swing motion of said suction plate is freely adjusted within a horizontal plane in a direction perpendicular to said feeding direction of said film.

3. The bag-making and packing machine according to Claim 2, wherein said bag transfer apparatus comprises a suction plate advancing and retracting mechanism that:

lowers said suction plate by a specified distance toward said receiving position and then raises said suction plate when said suction plate is in said downward-facing position, and

causes said suction plate to advance by a specified distance toward said transfer position and then retracts said suction plate when said suction plate is in said sideward-facing position.

4. The bag-making and packaging machine according to Claim 1, wherein said bag transfer apparatus comprises:

a swing supporting shaft that is disposed parallel to said feeding direction of said film,

a slide shaft holder that is fastened to said swing supporting shaft,

a slide shaft which is supported on said slide shaft holder so as to be free to slide in a direction of length thereof and is provided perpendicular to said swing supporting shaft,

a suction plate which is attached to a front end of said slide shaft,

a suction plate swing mechanism that causes said swing supporting shaft to make a reciprocating rotational motion and thus causes said suction plate to make a reciprocating swing motion together with said slide shaft between a lower downward-facing position and an upper sideward-facing position, and

a suction plate advancing and retracting mechanism which causes said slide shaft to slide in a direction of length thereof and thus causes said suction plate to advance or retract; and wherein

said suction plate advancing and retracting mechanism lowers said suction plate by a specified distance toward said receiving position and then raises said suction plate when said suction plate is in said downward-facing position, and further causes said suction plate to advance by a specified distance toward said transfer position and then retracts said suction plate when said suction plate is in said sideward-facing position, and

said swing supporting shaft is freely adjustable positionally in a horizontal plane in a direction perpendicular to said feeding direction of said film.

5. The bag-making and packaging machine according to Claim 1, wherein

said bag-making apparatus is a W type bag-making apparatus which manufactures two bags at a time by causing an amount of a film that is intermittently fed from said sealing apparatus on to be twice a bag width and performing respective bag-making operations at a same time on said film that is twice a bag width,

said bag-filling packaging apparatus is a W type bag-filling packaging apparatus in which bags are simultaneously supplied to two adjacent sets of grippers, and packaging operations are simultaneously performed on said two bags gripped by said two sets of grippers, and

said bag transfer apparatus is a W type bag transfer apparatus which receives two bags at said receiving position, conveys said bags to said transfer position,

and transfers said bags to said two sets of grippers of said bag-filling packaging apparatus.

6. The bag-making and packaging machine according to Claim 5, wherein said bag transfer apparatus comprises:

two sets of suction plates which are disposed so that said two sets of suction plates are free to swing in a vertical plane that is perpendicular to a feeding direction of said film and which are disposed along said film feeding direction, and

a suction plate swing mechanism which causes said two sets of suction plates to simultaneously make a reciprocating swing motion between a lower downward-facing position and an upper sideward-facing position; and wherein

bag surfaces of bags in a horizontal attitude are suction-chucked when said two sets of suction plates are respectively in said downward-facing position,

said bags are caused to stand upright when said two sets of suction plates reach said sideward-facing position,

axial lines of a swing motion of said two sets of suction plates are in common, and

positions of said axial lines is freely adjustable in a horizontal plane in a direction perpendicular to said feeding direction of said film.

7. The bag-making and packaging machine according to Claim 6, wherein said bag transfer apparatus comprises a suction plate advancing and retracting mechanism that:

simultaneously lowers, when said two sets of suction plates are in said downward-facing position, said two sets of suction plates by a specified distance toward said receiving position and then raises said two sets of suction plates, and

simultaneously causes, when said two sets of suction plates are in said sideward-facing position, said two sets of suction plates to advance by a specified distance toward said transfer position and then retracts said two sets of suction plates.

8. The bag-making and packaging machine according to Claim 6 or 7, wherein said bag transfer apparatus comprises a suction plate gap adjustment mechanism which adjusts a gap between said two sets of suction plates.

9. The bag-making and packaging machine according to Claim 8, wherein said suction plate gap adjustment mechanism:

widens said gap between said two sets of suction plates when said two sets of suction plates swing, in one swinging direction, from said downward-facing position into said sideward-facing position, and

narrows said gap between said two sets of suction plates when said two sets of suction plates swing in another swinging direction which is opposite from said one swinging direction.

10. The bag-making and packaging machine according to Claim 9, wherein said suction plate gap adjustment mechanism:

adjusts said gap between said two sets of suction plates in response to said bag width when said two sets of suction plates are in said downward-facing position, and

maintains said gap between said two sets of suction plates at a constant distance regardless of said bag width when said two sets of suction plates are in said sideward-facing position.

11. The bag-making and packaging machine according to Claim 1, wherein said bag transfer apparatus comprises:

two swing supporting shafts that are disposed parallel to said feeding direction of said film,

two slide shaft holders that are respectively fastened to said swing supporting shafts,

two slide shafts which are respectively supported on said slide shaft holders so as to be free to slide in a direction of length thereof and are respectively provided perpendicular to said swing supporting shafts,

two sets of suction plates which are respectively attached to a front ends of said slide shafts,

a suction plate swing mechanism that causes both of said two swing supporting shafts to make a reciprocating rotational motion and thus causes said two sets of suction plates to make a reciprocating swing motion together with both of said two slide shafts between a lower downward-facing position and an upper sideward-facing position, and

a suction plate advancing and retracting mechanism which causes both of said two slide shafts to slide in a direction of length thereof and thus causes said two sets of suction plates to advance or retract; and wherein

both of said two swing supporting shafts have a common axis line,

said two sets of suction plates are provided in said feeding direction of the said film,

said suction plate advancing and retracting mechanism lowers said two sets of suction plates by a specified distance toward said receiving position and then raises said suction plate when said two sets of suction plates are in said downward-facing position, and further causes said two sets of suction plates to advance by a specified distance toward said transfer position and then retracts said two sets of suction plates when said two sets of suction plates are in said sideward-facing position, and

both of said two swing supporting shafts are freely adjustable positionally in a horizontal plane in a direction perpendicular to said feeding direction of said film.

12. The bag-making and packaging machine according to Claim 11, wherein said bag transfer apparatus comprises a suction plate gap adjustment mechanism which adjusts positions of both of said two swing supporting shafts in a direction of axial line thereof by moving both of said two swing supporting shafts in mutually opposite directions and thus adjusting a gap between said two sets of suction plates.

13. The bag-making and packaging machine according to Claim 12, wherein said suction plate gap adjustment mechanism:

widens said gap between said two sets of suction plates by moving both of said two swing supporting shafts in one moving direction when said two sets of suction plates swing, in one swinging direction, from a downward-facing position into a sideward-facing position, and

narrows said gap between said two sets of suction plates by moving both of said two swing supporting shafts in another moving direction which is opposite from said one moving direction when said two sets of suction plates swing in another swinging direction which is opposite from said one swinging direction.

14. The bag-making and packaging machine according to Claim 13, wherein said suction plate gap adjustment mechanism:

adjusts said gap between said two sets of suction plates in response to said bag width when said two sets of suction plates are in said downward-facing position, and

maintains said gap between said two sets of suction plates at a constant distance regardless of a bag width when said two sets of suction plates are in said sideward-facing position.

15. The bag-making and packaging machine according to any one of Claims 1 through 4, wherein said cutting apparatus comprises:

a film supporting plate which is disposed in a horizontal attitude in said receiving position so as to support said film and is tiltably provided so that said bag mouth side of said film is set to be lower than other portion of said film,

a swing mechanism that causes said film supporting plate to swing between said horizontal attitude and a tilted attitude,

upper and lower cutting blades which are provided on a upstream side of said film supporting plate and are respectively attached to a cutter blade supporting shaft that is disposed along a direction of length of said film on said bag bottom side of said film so that said cutting blades are free to open and close upward and downward, and

an opening and closing mechanism that opens and closes said upper and lower cutting blades.

16. The bag-making and packaging machine according to any one of Claims 5 through 7 and 11 through 14, wherein said cutting apparatus comprises:

two film supporting plates which are disposed in a horizontal attitude in said receiving position so as to support said film and are tiltably provided so that said bag mouth side of said film is set to be lower than other portion of said film,

a swing mechanism that causes both of said two film supporting plates to swing between said horizontal attitude and a tilted attitude,

two sets of upper and lower cutting blades which are provided on a upstream side of said film supporting plates and are respectively attached to two cutter blade supporting shafts that are disposed along a direction of length of said film on said bag bottom side of said film so that said cutting blades are free to open and close upward and downward, and

an opening and closing mechanism that opens and closes said two sets of upper and lower cutting blades.

17. The bag-making and packaging machine according to Claim 8, wherein said cutting apparatus comprises:

two film supporting plates which are disposed in a horizontal attitude in said receiving position so as to support said film and are tiltably provided so that said bag mouth side of said film is set to be lower than other portion of said film,

a swing mechanism that causes both of said two film supporting plates to swing between said horizontal attitude and a tilted attitude,

two sets of upper and lower cutting blades which are provided on a upstream side of said film supporting plates and are respectively attached to two cutter blade supporting shafts that are disposed along a direction of length of said film on said bag bottom side of said film so that said cutting blades are free to open and close upward and downward, and

an opening and closing mechanism that opens and closes said two sets of upper and lower cutting blades.

18. The bag-making and packaging machine according to Claim 9, wherein said cutting apparatus comprises:

two film supporting plates which are disposed in a horizontal attitude in said receiving position so as to support said film and are tiltably provided so that said bag mouth side of said film is set to be lower than other portion of said film,

a swing mechanism that causes both of said two film supporting plates to swing between said horizontal attitude and a tilted attitude,

two sets of upper and lower cutting blades which are provided on a upstream side of said film supporting plates and are respectively attached to two cutter blade supporting shafts that are disposed along a direction of length of said film on said bag bottom side of said film so that said cutting blades are free to open and close upward and downward, and

an opening and closing mechanism that opens and closes said two sets of upper and lower cutting blades.

19. The bag-making and packaging machine according to Claim 10, wherein said cutting apparatus comprises:

two film supporting plates which are disposed in a horizontal attitude in said receiving position so as to support said film and are tiltably provided so that said bag mouth side of said film is set to be lower than other portion of said film,

a swing mechanism that causes both of said two film supporting plates to swing between said horizontal attitude and a tilted attitude,

two sets of upper and lower cutting blades which are provided on a upstream side of said film supporting plates and are respectively attached to two cutter blade supporting shafts that are disposed along a direction of length of said film on said bag bottom side of said film so that said cutting blades are free to open and close upward and downward, and

an opening and closing mechanism that opens and closes said two sets of upper and lower cutting blades.